FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-8072
EKA CHEMICALS

INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. 8072. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to City of Moses Lake, Dunes Treatment Plant. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.160) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. This statute includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities which discharge into public waters of the state. Regulations adopted by the state include procedures for issuing permits and establish requirements which are to be included in the permit (Chapter 173-216 WAC).

This fact sheet and draft permit are available for review by interested persons as described in Appendix A—Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D—Response to Comments.

GENERAL INFORMATION	
Applicant	Akzo Nobel
Facility Name and Address	Eka Chemicals, 2701 Road "N" NE, Moses Lake, WA 98837
Type of Facility	Bleaching and Paper Chemicals Production
Facility Discharge Location	Latitude: 47° 7' 30" N Longitude: 119° 11' 30" W
Treatment Plant Receiving Discharge	City of Moses Lake, Dunes Treatment Plant
Contact at Facility	Name: Lind Bingham Telephone #: (509) 765-5557
Responsible Official	Name: Jimmy Calvin Greene Title: Plant Manager Telephone #: (509) 765-6400

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BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

Akzo Nobel, Eka Chemicals owns and operates a production facility in Moses Lake (see Figure 1). The facility has two operating units: Bleaching Chemicals and Paper Chemicals. The majority of finished products are used in the pulp and paper industry.

The facility discharges wastewater to the City of Moses Lake, Sand Dunes Treatment Plant. Eka Chemicals is a significant industrial user (discharge flow greater than 15,000 gpd), and is subject to Categorical Pretreatment Standards (40 CFR Part 415, Suppart BN, Sodium Chlorate Production Subcategory)

HISTORY

The facility first began operation at the site in 1990 producing only sodium chlorate. Shortly thereafter, the manufacture of a paper coating chemical (an aklkyl-Ketene dimer emulsion - AKD) was added. In 2004, the facility expanded with additional product lines which included a range of paper making agents and a wood laminate glue additive. The facility also off loads and reloads other paper chemical products for redistribution on the West Coast.

INDUSTRIAL PROCESSES

Sodium chlorate is produced by electrolysis of an aqueous salt solution according to the following equation:

$$NaCl + 3H_2O \rightarrow NaClO_3 + 3H_2$$

Bulk salt is imported by rail. The salt is dissolved in water and purified by precipitation, filtration and de-ionization. The salt solution is then sent to electrolytic cells. Sodium chlorate is crystallized out of solution, is washed, dried and shipped in bulk by rail and truck. There is no process wastewater generated in the electrolytic cells and subsequent sodium chlorate crystallization. Sodium chlorate is sold is both solid and solution form. The byproduct hydrogen gas is piped to an adjacent industrial facility for use as boiler fuel.

Products made within the Paper Chemicals Unit include paper coatings, sizing agents, paper sheet lubricants, and an adhesive additive. These products are made in batches, typically by adding base ingredients, mixing, heating, then cooling.

Stormwater runoff from the site is directed to a lined evaporation pond.

TREATMENT PROCESSES

Wastewaters from the facility consist of ion exchange backwash, cooling tower blowdown, sand filter backwash, noncontact cooling water, and process equipment rinsing/cleaning. Process water is supplied by the City of Moses Lake.

For sodium chlorate production, the raw water supply is treated by sand filtration. Backwash from this filtration is discharged to outfall 001. The filtered water is then treated by both anion

and cation exchange units. Regenerations from the anion/cation exchange units are routed through a neutralization tank, where the pH is checked and adjusted, if necessary. The neutralized water is then batch discharged to outfall 001.

Supply water for the cooling water system is also treated by sand filtration. Backwash from this sand filter, along with blowdown from the cooling towers, are discharged to outfall 001.

For AKD and paper chemicals production, wastewaters consist of boiler blowdown, noncontact cooling water, and equipment cleaning and rinsing. The cleaning and rinsing wastewaters are sent to a 10,000 gallon tank. The pH is checked and adjusted if necessary. The tank is batch discharged to outfall 001. Floor drains in the AKD building are directed to a concrete sump. Water that accumulates in this sump from floor washing is filtered to remove solids before being discharged.

Because of an expanded customer base for sodium chlorate solution, coupled with higher cooling tower blowdown during the summer months, the Permittee has requested an increase in chloride and sodium discharge limits. The impact of these increases on the City of Moses Lake's wastewater collection and treatment system is discussed in the 'Effluent Limits Based on Local Limits' section.

PERMIT STATUS

The previous permit for this facility was issued in April, 1997.

An application for permit renewal was submitted to the Department on December 30, 2005 and accepted by the Department on January 24, 2006.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection in May, 2006. During the history of the previous permit, the Permittee has generally remained in compliance based on Discharge Monitoring Reports (DMRs), other reports submitted to the Department, and inspections conducted by the Department.

From June, 2004 to May, 2006, there were a total of two permit limit exceedences, both occurring in July, 2005 (flow and chloride). The cause of the chloride exceedence could not be exactly identified; however, the Permittee believed that an ion exchange unit in the Paper Chemicals building may have been source. Backwash from this ion exchange unit was then replumbed to be used as makeup water in the incoming salt dissolution process. Since that time, chloride limits have been below permitted values.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. Table 1 lists a discharge monitoring report summary from January, 2003 to May, 2006. The data from Table 1 is summarized below:

Parameter	Min	Avg	Max
Flow (gpd)	82,011	105,605	138,082

Parameter	Min	Avg	Max
pH (s.u.)	7.6	8.2	10.4
Cond (µmhos/cm	127	1,163	1,376
Temp (°F)	59.6	66.1	89.0
TDS (mg/L)	795	888	2,006
TSS (mg/L)	4.6	11.8	161
Chloride (mg/L)	42.5	59.6	236.8
(lbs/day)	0.1	51.6	232.9
Sodium (mg/L)	131.8	213.1	424.8
(lbs/day)	97.0	188.0	412.3

The permit renewal application contained additional effluent analyses (priority pollutant scan & other parameters). Volatile, semi-volatile organics, pesticides, and PCBs were not detected in the effluent. Partial results from the other application wastewater analyses are summarized below:

Parameter	Concentration (mg/L)
Aluminum	0.07
Arsenic	0.005
Calcium	47
Cadmium	<0.0005
Chromium	0.009
Copper	<0.001
Iron	0.014
Mercury	<0.0002

Parameter	Concentration (mg/L)
Potassium	10
Magnesium	26
Manganese	<0.0005
Nickel	<0.005
Phosphorus	0.21
Lead	<0.001
Silicon	23
Zinc	<0.001

Trace levels of arsenic and chromium were detected in the effluent. These are most likely from trace levels in the supply water.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be based on the technology available to treat the pollutants (technology-based) or be based on the effects of the pollutants to the POTW (local limits). Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not interfere with the operation of the POTW.

The minimum requirements to demonstrate compliance with the AKART standard and specific design criteria for this facility were determined in the permit application.

The more stringent of the local limits-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). Existing federal categorical limitations for this facility are found under 40 CFR part 415, Inorganic Chemical Manufacturing, subpart BN - Sodium Chlorate Production. Pretreatment standards for new sources (PSNS) (40 CFR Part 415.666) limit the amount of antimony and chromium that can be discharged into a publicly owned treatment works from the manufacture of sodium chlorate.

However, since there is no process wastewater generated from the sodium chlorate production process, these limits are not applicable and will not be placed in the proposed permit. The proposed permit will include a condition that prohibits the discharge of any process wastewater from the sodium chlorate production process.

EFFLUENT LIMITATIONS BASED ON LOCAL LIMITS

In order to protect City of Moses Lake, Sand Dunes Treatment Plant from pass-through, interference, concentrations of toxic chemicals that would impair beneficial or designated uses of sludge, or potentially hazardous exposure levels, limitations for certain parameters are necessary. These limitations are based on local limits established by the City of Moses Lake and codified in ordinance. Applicable limits for this discharge set by the City of Moses Lake include BOD_5 (limit of 300 mg/L), pH (within the range 6.0 to 11.0), oil and grease (limit of 100 mg/L), and TSS (limit of 350 mg/L).

The Sand Dunes treatment plant discharges its treated municipal wastewater to groundwater via rapid infiltration. Total dissolved solids (TDS) contained in the municipal wastewater may not be removed through the collection and treatment systems. These dissolved solids may pass through, and adversely impact downgradient ground water quality.

Table 2 lists TDS data from the City of Moses Lake, Sand Dunes treatment plant effluent for calendar year 2005. During that time, the effluent TDS averaged 10,043 lbs/day (1.92 mgd @ 627 mg/L). During the same time period, the Permittee discharged about 818 lbs/day (107,795 gpd @ 905 mg/L), or about 8 percent of the current loading to the treatment plant.

As mentioned previously, the Permittee has requested an increase their sodium and chloride discharge limits. These are compared to existing permit limits below:

Parameter	Monthly Average	Daily Maximum
Chloride, lbs/day	75 (125)	190 (250)
Sodium, lbs/day	350 (500)	500 (650)

The Permittee has estimated that the resulting TDS levels would rise from a current monthly average of 868 to 1,277 lbs/day. The proposed monthly average TDS limit for the Permittee is 1,366 lbs/day (discussed below). The Department evaluated this increase along with REC Solar Grade Silicon's proposed expansion. REC Solar Grade Silicon is an adjacent industry that also discharges to the City of Moses Lake's Dunes treatment plant. Table 2 shows the 2005 calander year flow and TDS values discharged from these industries. Table 3 lists the existing (based on year 2005) and maximum TDS loadings, and the resulting TDS concentrations in the Dunes treatment plant effluent.

With the Permittee's increase, their contribution to TDS at the Dunes plant is expected to rise from 8 to 11 percent. In a worst case scenario, if both industries are discharging at their maximum monthly average flow and TDS values, the TDS at the Dunes plant is projected to increase from 624 to 686 mg/L. Also, the total contribution of TDS from these two industries to the Dunes plant would climb from 19.7 to 31 percent.

This worst case TDS concentration at the Dunes facility is below their permitted level of 1,000 mg/L. The total TDS loading to the Dunes facility of 11,690 lbs/day is below a calculated maximum of 35,862 lbs/day (4.3 mgd design flow @ 1,000 mg/L).

The Permittee has also examined the wastewater's corrosion potential. The carbon steel corrosion rate was very low. Estimated corrosion rates resulting from the increase in sodium and chloride levels were also low.

Therefore, TDS concentrations in the proposed discharge with existing controls in place do not appear to cause problems at the receiving POTW such as interference, pass-through or hazardous exposure to POTW workers. The TDS concentrations are also unlikely to result in unacceptable pollutant levels in the POTW’s sludge.

In the proposed permit, the Department has reexamined the existing TDS permit limits (monthly average and daily maximum of 2,000 and 2,500 mg/L, respectively). A monthly average TDS load (using 2,000 mg/L and the permitted monthly average flow of 150,000 gpd) is 2,502 lbs/day. This is considerably higher than currently discharged from the facility.

The Department is proposing to set mass-based limits based on past history, with an added factor for plant expansion. The average and standard deviation were calculated for the monthly average and daily maximum TDS values, in lbs/day, from January, 2003 to May, 2006 (Table 3). The average of both values were multiplied by a factor of 1.47 (the ratio of proposed sodium plus chloride limits to existing sodium plus chloride limits). The proposed permit limits were obtained by adding two standard deviations (an estimation of a 95^{th} percentile) to the adjusted averages. The proposed average monthly and daily maximum permit limits are 1,366 lbs/day and 2,275 lbs/day, respectively. Figure 2 compares the proposed limits with actual discharge levels.

Lastly, there is a potential for the discharge from the AKD/Paper Chemical Unit operations to cause interference to the City of Moses Lake's collection and treatment system. The City uses ultraviolet light (UV) to disinfect their wastewater. City personnel have reported that there is a build up of substances on the UV lamps that impedes their performance. The source of the substance(s) is unknown, but would fit the nature of some of the paper chemicals produced by the Permittee.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED

Parameter	Average Monthly		Maximum Daily	
	Existing	Proposed	Existing	Proposed
Flow, gpd	120,000	150,000	150,000	180,000
BOD_5, mg/L	-	-	300	300
TSS, mg/L	-	-	350	350
Chloride, lbs/day	75	125	190	250
Sodium, lbs/day	350	500	500	650
TDS, mg/L	2,000	-	2,500	-
TDS, lbs/day	-	1,366	-	2,275
pH, s.u.	-	-	Within the Range 6.0-11.0	Within the Range 6.0-11.0

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, and that effluent limitations are being achieved (WAC 173-216-110).

The monitoring schedule is detailed in the proposed permit under Condition S2 and S3. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

Monitoring for specific ions (calcium, magnesium, potassium, nitrate, sulfate, carbonate, bicarbonate, silica, ammonia, and nitrate) is being required to further characterize the effluent for TDS.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110 and 40 CFR 403.12 (e),(g), and (h)).

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under Chapter 173-240-150 WAC and Chapter 173-216-110 WAC. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are

used to their optimum potential in terms of pollutant capture and treatment. The proposed permit requires submission of an updated O&M manual for the entire wastewater system.

PROHIBITED DISCHARGES

Certain pollutants are prohibited from being discharged to the POTW. These include substances which cause pass-through or interference, pollutants which may cause damage to the POTW or harm to the POTW workers (Chapter 173-216 WAC) and the discharge of designated dangerous wastes not authorized by this permit (Chapter 173-303 WAC).

ENGINEERING REPORT FOR TDS REDUCTION/AKD BUILDING SOLIDS REDUCTION

Because of the Permittee's continued contribution of TDS to the Dunes treatment plant, the proposed permit will require an engineering report evaluating options to prevent, control, and/or treat to further reduce effluent TDS. Also, because of the potential for the discharge to cause interference, the proposed permit will also require the engineering report to address alternatives for solids reduction from the AKD/Paper Chemical Unit operations.

DILUTION PROHIBITED

The Permittee is prohibited from diluting its effluent as a partial or complete substitute for adequate treatment to achieve compliance with permit limitations.

SOLID WASTE PLAN

The Department has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This proposed permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state and submit it to the Department. The plan must also be submitted to the local solid waste permitting agency for approval.

NON-ROUTINE AND UNANTICIPATED DISCHARGES

Occasionally, this facility may generate wastewater which is not characterized in their permit application because it is not a routine discharge and was not anticipated at the time of application. These typically are waters used to pressure test storage tanks or fire water systems or leaks from drinking water systems. These are typically clean waste waters but may be contaminated with pollutants. The permit contains an authorization for non-routine and unanticipated discharges. The permit requires a characterization of these waste waters for pollutants and examination of the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and opportunities for reuse, Ecology may authorize a direct discharge to the municipality, require the wastewater to be placed through the facilities wastewater treatment process or require the water to be reused.

SPILL PLAN

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to POTW permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control production or wastewater discharge in order to maintain compliance with the permit. Condition G10 prohibits the reintroduction of removed pollutants into the effluent stream for discharge. Condition G11 requires the payment of permit fees. Condition G12 describes the penalties for violating permit conditions.

PUBLIC NOTIFICATION OF NONCOMPLIANCE

A list of all industrial users which were in significant noncompliance with Pretreatment Standards or Requirements during any of the previous four quarters may be annually published by the Department in a local newspaper. Accordingly, the Permittee is apprised that noncompliance with this permit may result in publication of the noncompliance.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

FIGURES AND TABLES

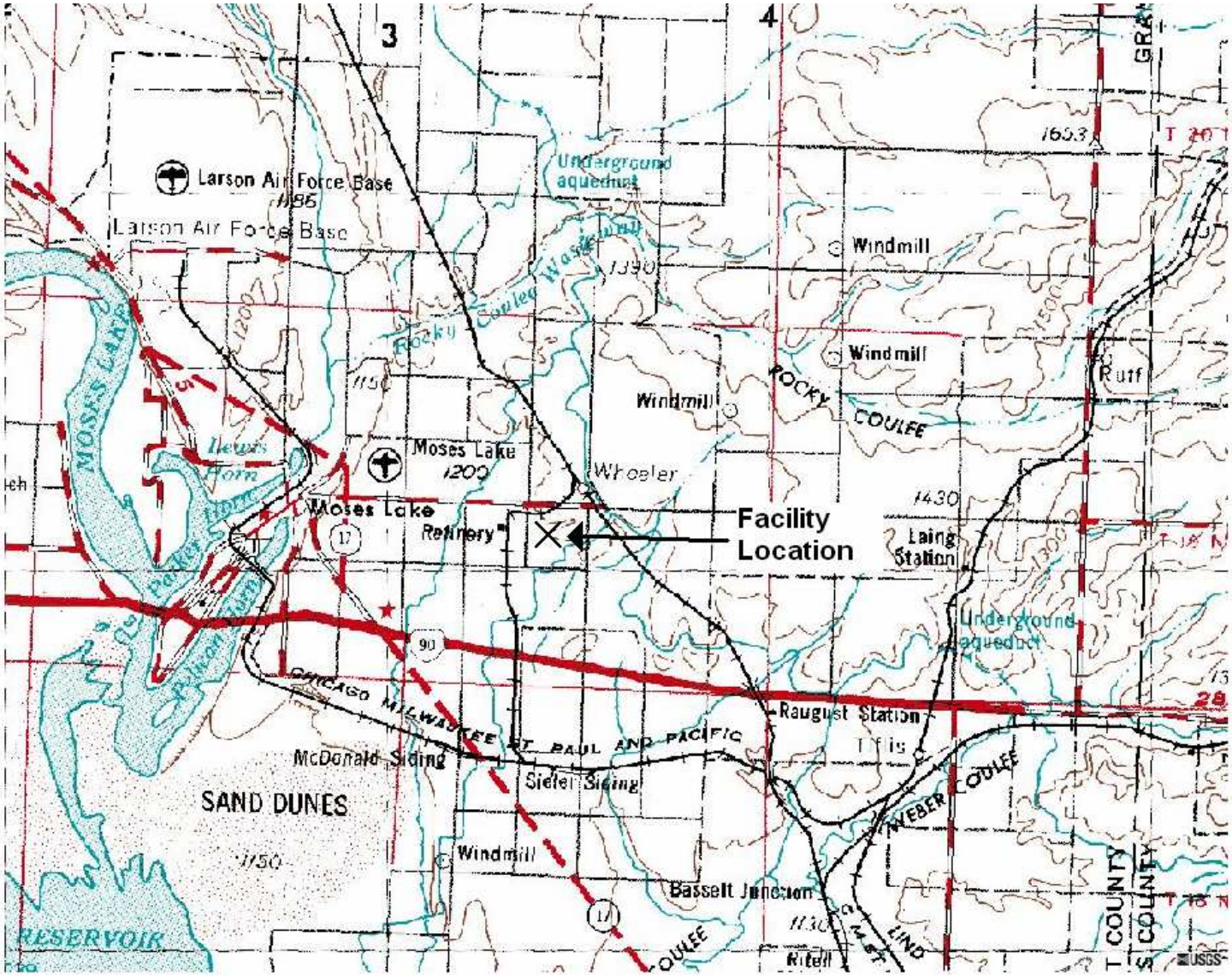

Figure 1 - Site Location, Eka Chemicals

Figure 2 - Proposed TDS Limits vs Actual Discharge, Eka Chemicals

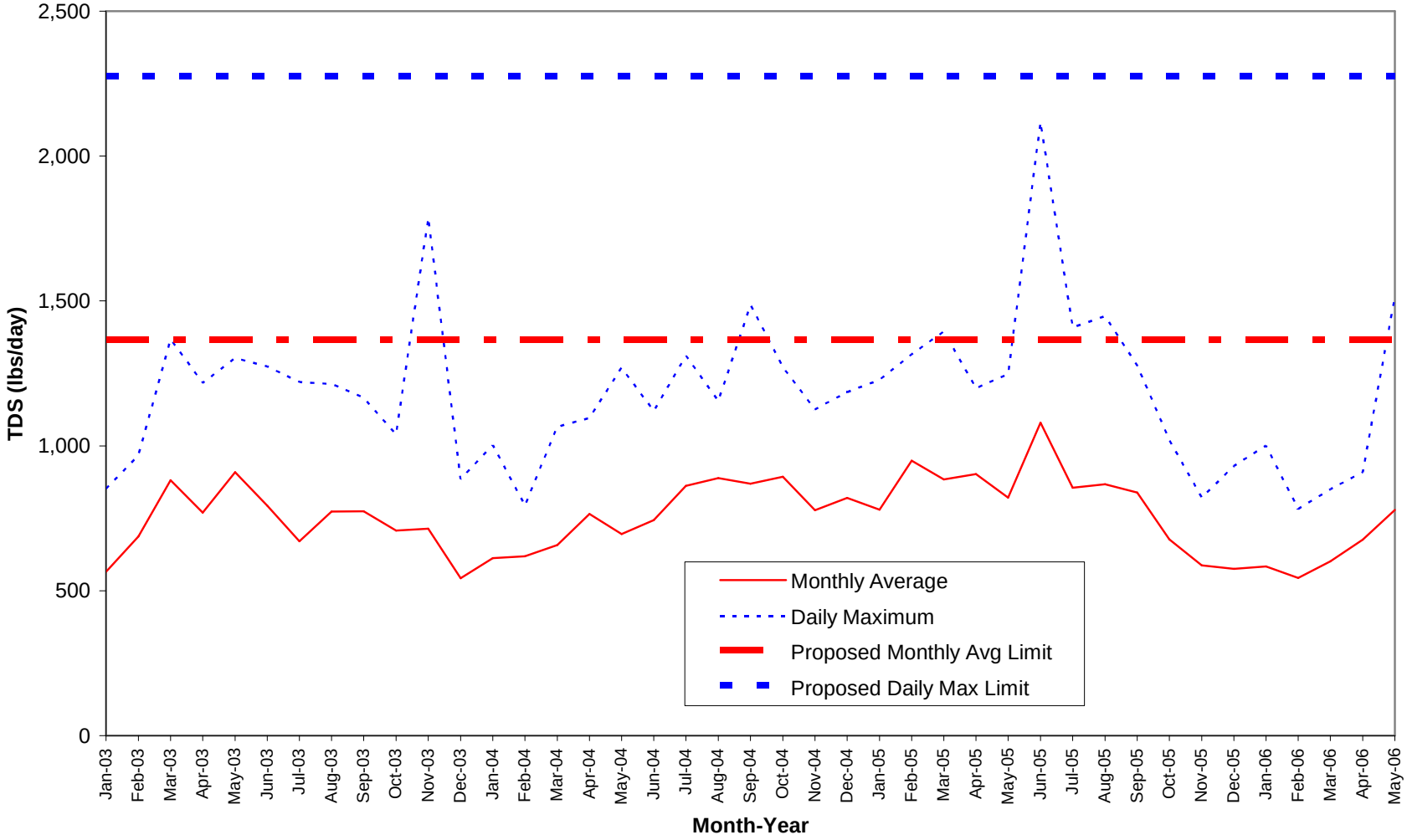

Table 1 - Effluent DMR Summary, June, 2004 to May, 2006, Eka Chemicals

	Flow (gpd)		pH (s.u.)		Cond (µmhos/cm)		Temp (℉)		TSS (mg/L)		TDS (mg/L)	
Date	Avg	Max	Min	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
Jun-04	108,785	125,802	8.6	9.8	1,115	1,493	78.7	89.0	7.0	11.0	819	1,068
Jul-04	111,108	127,767	7.9	9.7	1,247	1,547	69.1	72.9	8.0	15.0	930	1,230
Aug-04	110,513	118,510	7.8	9.6	1,292	1,532	69.0	72.3	8.4	22.0	965	1,168
Sep-04	115,904	125,702	7.8	9.8	1,234	1,706	66.0	70.0	8.5	18.0	899	1,418
Oct-04	117,475	129,054	7.8	9.5	1,226	1,628	64.1	68.9	6.0	10.0	912	1,182
Nov-04	113,499	120,420	7.6	9.5	1,156	1,506	64.9	69.3	10.0	14.0	822	1,121
Dec-04	111,885	120,729	7.7	9.7	1,201	1,578	63.4	71.8	14.0	41.0	879	1,178
Jan-05	112,379	122,096	7.8	9.6	1,155	1,531	67.9	73.9	27.2	118.0	832	1,206
Feb-05	119,088	131,237	8.2	10.0	1,308	1,766	61.9	70.1	9.0	17.0	956	1,202
Mar-05	113,179	129,791	7.6	9.6	127	1,644	64.6	67.6	9.3	15.0	937	1,288
Apr-05	112,945	126,118	8.0	9.4	1,304	1,590	66.2	70.0	5.0	7.0	958	1,140
May-05	101,368	118,677	8.0	9.2	1,333	1,553	65.9	69.4	16.6	42.0	972	1,260
Jun-05	118,426	126,547	8.5	9.2	1,376	1,720	66.1	70.1	13.5	20.0	1,094	2,006
Jul-05	**120,551**	133,206	8.6	9.6	1,164	1,729	66.2	69.6	46.3	161.0	851	1,268
Aug-05	112,634	120,077	8.3	9.6	1,231	1,894	66.8	69.6	4.6	8.0	923	1,446
Sep-05	112,445	119,765	8.6	8.7	1,219	1,625	66.0	68.7	6.0	8.0	894	1,278
Oct-05	98,521	109,079	8.5	9.1	1,137	1,377	64.9	68.9	11.6	22.0	824	1,120
Nov-05	88,071	97,738	8.3	8.6	1,255	1,089	59.6	63.4	16.0	29.0	800	1,008
Dec-05	83,929	92,821	8.4	9.0	1,087	1,348	67.2	77.4	9.3	22.0	823	1,202
Jan-06	87,587	94,207	8.7	9.5	1,170	1,685	65.0	72.5	15.4	38.0	799	1,273
Feb-06	82,011	92,512	8.6	9.0	1,158	1,600	65.2	72.3	8.8	23.0	795	1,014
Mar-06	85,107	91,946	8.6	10.4	1,162	1,425	65.4	71.2	4.8	8.0	848	1,109
Apr-06	89,617	104,333	8.6	9.8	1,136	1,442	67.2	69.0	8.8	18.0	905	1,044
May-06	107,496	138,082	8.4	9.4	1,117	1,590	64.2	68.6	9.6	16.0	869	1,317
Min	82,011	91,946	7.6	8.6	127	1,089	59.6	63.4	4.6	7.0	795	1,008
Avg	105,605	117,342	8.2	9.5	1,163	1,567	66.1	71.1	11.8	29.3	888	1,231
Max	120,551	138,082	8.7	10.4	1,376	1,894	78.7	89.0	46.3	161.0	1,094	2,006
	Permit Limits:											
Min	-	-	6.0	-	-	-	-	-	-	-	-	-
Avg	120,000	-	-	-	-	-	-	-	-	-	2,000	-
Max	-	150,000	-	11.0	-	-	-	-	-	350	-	2,500

Bold, shaded cells indicate permit exceedence

Table 1 - Effluent DMR Summary, June, 2004 to May, 2006, Eka Chemicals

	Chloride (lbs/day)		Chloride (mg/L)		Sodium (lbs/day)		Sodium (mg/L)	
Date	Avg	Max	Avg	Max	Avg	Max	Avg	Max
Jun-04	48.4	61.4	53.4	64.5	213.6	274.3	236.0	330.0
Jul-04	58.4	100.4	64.4	111.3	240.0	298.5	264.9	326.4
Aug-04	66.4	117.0	72.1	129.7	253.7	298.7	275.2	322.8
Sep-04	69.1	156.4	71.0	155.7	249.3	349.3	257.4	349.6
Oct-04	68.8	151.2	70.2	146.8	251.0	372.3	255.8	345.9
Nov-04	64.6	128.8	67.9	139.2	221.3	303.5	233.2	310.8
Dec-04	67.8	121.6	72.7	131.6	217.0	320.8	232.6	340.0
Jan-05	65.4	149.6	69.8	158.1	223.6	309.7	238.4	329.6
Feb-05	60.1	114.4	60.8	119.1	188.0	294.7	190.2	312.8
Mar-05	59.4	155.4	62.5	157.1	151.2	234.3	159.9	248.0
Apr-05	59.7	128.3	62.4	130.5	147.2	212.9	154.0	205.6
May-05	60.0	121.5	70.7	144.9	136.6	175.3	160.9	201.6
Jun-05	72.2	136.7	73.3	141.1	163.5	230.4	165.3	226.4
Jul-05	70.9	**232.9**	70.3	236.8	241.4	364.7	240.7	370.8
Aug-05	49.8	82.5	53.0	85.0	190.8	412.3	204.5	424.8
Sep-05	57.2	69.4	61.1	69.9	147.2	261.3	156.5	261.6
Oct-05	43.1	57.1	51.9	63.1	120.6	171.8	144.6	197.6
Nov-05	34.0	41.0	46.1	51.8	97.0	127.5	131.8	167.4
Dec-05	32.6	42.2	46.5	55.3	151.1	220.5	215.0	291.6
Jan-06	31.1	36.0	42.5	48.9	164.7	189.4	225.9	296.0
Feb-06	30.3	39.8	44.2	56.0	157.8	215.3	229.5	303.0
Mar-06	31.9	37.6	45.0	54.2	174.2	210.8	245.6	297.0
Apr-06	36.7	47.8	49.1	63.9	190.1	235.8	253.7	299.0
May-06	0.1	0.1	48.5	69.0	220.2	337.7	243.8	332.0
Min	0.1	0.1	42.5	48.9	97.0	127.5	131.8	167.4
Avg	51.6	97.0	59.6	107.6	188.0	267.6	213.1	295.4
Max	72.2	232.9	73.3	236.8	253.7	412.3	275.2	424.8
Permit Limits:								
Min	-	-	-	-	-	-	-	-
Avg	75	-	-	-	350	-	-	-
Max	-	190	-	-	-	500	-	-

Bold, shaded cells indicate permit exceedence

Table 2 - Flow and TDS Values, City of Moses Lake, REC Solar Grade Silicon and Eka Chemicals

	Dunes Treatment Plant			REC Solar Grade Silicon			Eka Chemicals		
Date	Flow	TDS (mg/L)	TDS (lbs/day)	Flow	TDS (mg/L)	TDS (lbs/day)	Flow	TDS (mg/L)	TDS (lbs/day)
Jan-05	1.80	662	9,932	83,462	1903	1,325	112,379	832	780
Feb-05	1.78	659	9,783	90,869	1497	1,134	119,088	956	949
Mar-05	1.77	636	9,378	80,799	1599	1,078	113,179	937	884
Apr-05	1.79	593	8,833				112,945	958	902
May-05	1.99	633	10,479	87,285	2069	1,506	101,368	972	822
Jun-05	1.93	625	10,039	75,513	1878	1,183	118,426	1,094	1,080
Jul-05	2.00	680	11,354	78,827	2478	1,629	120,551	851	856
Aug-05	2.11	645	11,361				112,634	923	867
Sep-05	2.06	609	10,463	96,715	1228	991	112,445	894	839
Oct-05	2.00	615	10,263	87,349	1208	880	98,521	824	677
Nov-05	1.89	604	9,541	72,986	1269	772	88,071	800	588
Dec-05	1.93	566	9,087	71,063	1815	1,076	83,929	823	576
Avg	1.92	627	10,043	82,487	1694.4	1,157	107,795	905	818

Table 3 - Flow and TDS Calculations, Eka Chemicals

Flows

Facility:	Monthly Average Flows (gpd)			
		Permit Limits		
	2005 Avg	Existing	Proposed	Increase*
Eka Chemicals	107,795	120,000	150,000	42,205
REC Solar Grade Silicon	82,487	110,000	200,000	117,513
Total	190,282	230,000	350,000	159,718

* - Over existing flows

	Monthly Average Flow (MGD)			
		Design Flows		Resulting
	2005 Avg	Current	Ultimate	Increase
Dunes Facility:	1.92	2.5	4.3	2.08

Total Dissolved Solids

	Monthly Average TDS				
	2005 Avg		Permit Limits		Increase*
Facility:	mg/L	lbs/day	Existing	Proposed	(lbs/day)
Eka Chemicals	905	814	-	1,366	552
REC Solar Grade Silicon	1,694	1,166	2,352	2,352	1,186
Total	-	1,979	-	3,718	1,739

* - Over existing loads

	Monthly Average TDS				
	2005 Avg		Permit Limit		Resulting TDS
	mg/L	lbs/day	mg/L	lbs/day**	(mg/L)***
Dunes Facility:	627	10,040	1,000	20,850	679

** - Calculated using a design flow value of 2.5 mgd.
*** - Assuming Facilities discharged at maximum permitted monthly average flow and TDS limits

Table 4 - Calculation of Proposed TDS Limits, Eka Chemicals

	Flow		TDS (mg/L)		TDS (lbs/day)	
	avg	max	avg	max	avg	max
Jan-03	87,283	106,606	776.5	958	565.2	851.8
Feb-03	91,010	102,068	906.4	1,136	688.0	967.0
Mar-03	102,116	129,703	1034.9	1,264	881.4	1367.3
Apr-03	105,570	117,730	874.0	1,240	769.5	1217.5
May-03	111,611	120,561	976.9	1,296	909.3	1303.1
Jun-03	114,469	127,315	831.4	1,200	793.7	1274.2
Jul-03	95,074	121,950	846.0	1,200	670.8	1220.5
Aug-03	96,093	104,399	965.0	1,394	773.4	1213.7
Sep-03	110,709	121,950	838.7	1,146	774.4	1165.6
Oct-03	102,614	115,624	827.4	1,078	708.0	1039.5
Nov-03	82,342	113,115	1040.3	1,894	714.4	1786.8
Dec-03	83,613	88,803	779.9	1,196	543.9	885.4
Jan-04	81,784	101,322	897.6	1,186	612.2	1002.2
Feb-04	84,871	88,084	875.5	1,080	619.7	793.4
Mar-04	85,935	92,998	917.6	1,374	657.6	1065.7
Apr-04	96,146	107,758	955.0	1,220	765.8	1096.4
May-04	98,612	117,137	845.3	1,300	695.2	1270.0
Jun-04	108,785	125,802	819.5	1,068	743.5	1120.5
Jul-04	111,108	127,767	930.4	1,230	862.2	1310.7
Aug-04	110,513	118,510	964.7	1,168	889.1	1154.4
Sep-04	115,904	125,702	899.3	1,418	869.3	1486.6
Oct-04	117,475	129,054	912	1,182	893.5	1272.2
Nov-04	113,499	120,420	821.6	1,121	777.7	1125.9
Dec-04	111,885	120,729	879.0	1,178	820.2	1186.1
Jan-05	112,379	122,096	832.3	1,206	780.0	1228.0
Feb-05	119,088	131,237	955.8	1,202	949.3	1315.6
Mar-05	113,179	129,791	937	1,288	884.4	1394.2
Apr-05	112,945	126,118	958.0	1,140	902.4	1199.1
May-05	101,368	118,677	972.1	1,260	821.8	1247.1
Jun-05	118,426	126,547	1093.6	2,006	1080.1	2117.1
Jul-05	120,551	133,206	851.0	1,268	855.6	1408.7
Aug-05	112,634	120,077	923.3	1,446	867.3	1448.1
Sep-05	112,445	119,765	894.2	1,278	838.6	1276.5
Oct-05	98,521	109,079	824.3	1,120	677.3	1018.9
Nov-05	88,071	97,738	800.3	1,008	587.8	821.7
Dec-05	83,929	92,821	822.9	1,202	576.0	930.5
Jan-06	87,587	94,207	799.2	1,273	583.8	1000.2
Feb-06	82,011	92,512	795.3	1,014	544.0	782.4
Mar-06	85,107	91,946	848.0	1,109	601.9	850.4
Apr-06	89,617	104,333	904.7	1,044	676.2	908.4
May-06	107,496	138,082	868.6	1,317	778.7	1516.7
				Average	756.2	1186.3
				Standard Deviation	126.8	265.1

Existing permit limits for sodium (lbs/day) = 350
for chloride (lbs/day) = 75
Total (lbs/day) = 425

Proposed permit limits for sodium (lbs/day) = 500
for chloride (lbs/day) = 125
Total (lbs/day) = 625

Expansion Ratio = 625/425 1.47

Proposed Monthly Average Limit = average*ratio + 2 standard deviations
= 756.2*1.47+2*(126.8)
= 1,366 lbs/day

Proposed Maximum Daily Limit = average*ratio + 2 standard deviations
= 1186.3*1.47+2*(265.1)
= 2,275 lbs/day

APPENDICES

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 10 and 17, 2006 in the Columbia Basin Herald to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on October 5, 2006 in Columbia Basin Herald to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (509) 329-3500, or by writing to the address listed above.

APPENDIX B—GLOSSARY

Ammonia—Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation—The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass—The intentional diversion of waste streams from any portion of the collection or treatment facility.

Categorical Pretreatment Standards—National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample—A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity—Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Engineering Report—A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample—A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User—A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater—Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Interference— A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local Limits—Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Maximum Daily Discharge Limitation—The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Pass-through— A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH—The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug Discharge—Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate which may cause interference with the POTW.

State Waters—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater—That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria—A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids—That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit—A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C - RESPONSE TO COMMENTS